DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show reference number 122, unitized membrane electrode assembly, as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 5 and 12 are objected to because of the following informalities:

- Claim 5, a dependent claim to claim 1, refers to "the two dielectric films" without antecedent basis from claim 1.
- Claim 12, line 3, recites "remander" which appears to be a misspelling of the word "remainder".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-5, 7-12, and 14-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuroki (US Publication No. 2003/0013000 A1).

As to claim 1, Kuroki teaches a gasket having an integrated sensor (for a fuel cell; Figures 1-7) comprising:

- A gasket with an exterior surface (Figures 1-7 and Paragraph 20 Lines 5-8),
- A sensor coupled to the exterior of the gasket with a protruding portion (Figures 1-7, print circuit 12 disposed on substrate layer 7/22/23/18,19/22,23), with
- The sensor being comprised of a conductor disposed on at least one dielectric layer (Figures 1-7, print circuit 12 disposed on substrate layer 7/22/23/18,19/22,23).

As to claim 10, Kuroki teaches a gasket having an integrated sensor (for a fuel cell; Figures 1-7) comprising:

- a gasket having a planar form with a top surface, a bottom surface and a side perimeter surface (Figures 1-4 and 6-7 are cross sectional views of the gasket which shows gasket portions 8,9 that have planar surfaces on the top, bottom and side surfaces),
- the gasket further including a protruding portion extending outwardly in a direction substantially planar to the top surface of the gasket (Figures 1-5 define a protruding portion 7b planar to the surface of the gasket and Figures 6 and 7 define a detecting portion 17 and 21 respectively which protrude out from a planar surface of the gasket), and
- a sensor formed on the protruding portion of the gasket (Figures 1-7, print circuit 12 disposed on substrate layer 7/22/23/18,19/22,23 and Figures 6 and 7 specifically showing a detecting portion 17, 21).

As to claim 2, Kuroki teaches the gasket having a planar form with a top surface, a bottom surface and a side perimeter surface such that the sensor (Figures 1-4 and 6-7are cross sectional views of the gasket which shows gasket portions 8,9 that have planar surfaces on the top, bottom and side surfaces) is coupled to at least one of the top surface and bottom surface of the gasket and protrudes (Figures 1-5 define a protruding portion 7b planar to the surface of the gasket

and Figures 6 and 7 define a detecting portion 17 and 21 respectively which protrude out from a planar surface of the gasket) in a direction substantially planar to the top surface of the gasket.

As to claim 3, Kuroki teaches using an adhesive agent in arranging the print circuit to the gasket (Paragraph 18, Lines 13-19).

As to claim 4, Kuroki teaches the conductor (print circuit 12) sandwiched between two dielectric films (18, 19) (Figure 6 and Paragraph 56, Lines 8-9).

As to claims 5 and 12, Kuroki teaches a print circuit forming a sensing portion, protruding outward forming a detecting portion and a measurement terminal portion sandwiched between two films (Figure 7 and Paragraph 58, Lines 3-6).

As to claims 7 and 14, Kuroki teaches the circuit portion formed by using copper, gold, or the like (Paragraph 18, Lines 5-8).

As to claims 8 and 15, Kuroki teaches the substrate being made of a heat-resistant resin sheet such as polyimide (Paragraph 18, Lines 1-2).

As to claims 9 and 16, Kuroki teaches the seal configured for the purpose of mounting to the ion exchange membrane (Paragraph 33, Lines 1-4).

As to claim 11, Kuroki teaches the sensor comprising a conductor (print circuit 12) formed on the protruding portion of the gasket.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 6 and 13 rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroki (US Publication No. 2003/0013000 A1) as applied to claim 1 and 10 above, and further in view of Bunyan (US Patent 6432497 B2).

As to claim 6 and 13, all the limitations were addressed above with respect to claim 1 and 10 respectively, except bonding of the dielectric films to the conductor using a bonding method, specifically to the use of a pressure sensitive adhesive. Kuroki teaches the use of an adhesive agent in arranging the print circuit to the gasket

(Paragraph 18, Lines 13-19). Kuroki also teaches the use of a pressure sensitive adhesive to bond the substrate to the electrolyte membrane (Paragraph 61, Lines 1-8 and Paragraph 31, Lines 1-7). It is known in the art to use a pressure sensitive adhesive to combine one substrate to another in which the substrates can be composed of a polymer or a metal as taught by Bunyan (Claims 2,3, and 6). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a pressure sensitive adhesive to bond the conductor to the (polymer) substrate of Kuroki to yield a durable and stable joint between the two components.

Contact/Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kwang Han whose telephone number is (571) 270-5264. The examiner can normally be reached on Monday through Friday 8:00am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica Ward can be reached on (571) 272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. H./
Examiner, Art Unit 4132

/Jessica Ward/
Supervisory Patent Examiner, Art Unit 4132